

879.155USWO

TRANSMITTAL LETTER TO THE UNITED STATES
DESIGNATED/ELECTED OFFICE (DO/EO/US)
CONCERNING A FILING UNDER 35 U.S.C. 371

U S APPLICATION NO (If known, see 37 C F R 15)

UNKNOWN 09/787982

| | | |
|-------------------------------|---------------------------|-----------------------|
| INTERNATIONAL APPLICATION NO. | INTERNATIONAL FILING DATE | PRIORITY DATE CLAIMED |
| PCTDE9902709 | 24-AUGUST-1999 | 22-SEPTEMBER-1998 |

TITLE OF INVENTION

DEVICE FOR PRODUCING PLASTIC PIPES

APPLICANT(S) FOR DO/EO/US

ULRICH, HERBERT

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. This express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(l).
4. A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.

5. A copy of the International Application as filed (35 U.S.C. 371(c)(2))
 - a. is transmitted herewith (required only if not transmitted by the International Bureau).
 - b. has been transmitted by the International Bureau.
 - c. is not required, as the application was filed in the United States Receiving Office (RO/US)
6. A translation of the International Application into English (35 U.S.C. 371(c)(2)).

7. Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))
 - a. are transmitted herewith (required only if not transmitted by the International Bureau).
 - b. have been transmitted by the International Bureau.
 - c. have not been made; however, the time limit for making such amendments has NOT expired.
 - d. have not been made and will not be made.

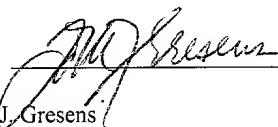
8. A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).

9. An oath or declaration of the inventor(s) (35 U.S.C. 371 (c)(4)).

10. A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

Items 11. to 16. below concern document(s) or information included:

11. An Information Disclosure Statement under 37 CFR 1.97 and 1.98., FORM 1449, 7 REFERENCES.
12. An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
13. A **FIRST** preliminary amendment.
 A **SECOND** or **SUBSEQUENT** preliminary amendment.
14. A substitute specification.
15. A change of power of attorney and/or address letter.
16. Other items or information: International Search Report, PCT/IB/306, PCT/IB/308

| | | | | |
|---|---|--|------------|------------|
| U.S. APPLICATION NO (If known, see 37 CFR 1.5) UNKNOWN 19/787982 | INTERNATIONAL APPLICATION NO 24-AUGUST-1999 | ATTORNEY'S DOCKET NUMBER 879.155USWO | | |
| 17. [X] The following fees are submitted: | | CALCULATIONS PTO USE ONLY | | |
| BASIC NATIONAL FEE (37 CFR 1.492(a) (1)-(5)): | | | | |
| Search Report has been prepared by the EPO or JPO..... International preliminary examination fee paid to USPTO (37 CFR 1.492(a)(1))..... | | \$860.00 \$690.00 | | |
| No international preliminary examination fee paid to USPTO (37 CFR 1.482) but international search fee paid to USPTO (37 CFR 1.445(a)(2))..... | | \$710.00 | | |
| Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(3)) paid to USPTO | | \$1000.00 | | |
| International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(2)-(4)..... | | \$100.00 | | |
| ENTER APPROPRIATE BASIC FEE AMOUNT = | | \$860.00 | | |
| Surcharge of \$130.00 for furnishing the oath or declaration later than [] 20 [] 30 months from the earliest claimed priority date (37 CFR 1.492(e)). | | \$0 | | |
| CLAIMS | NUMBER FILED | NUMBER EXTRA | RATE | |
| Total claims | 6 | -20 = 0 | X \$18.00 | \$0 |
| Independent claims | 2 | -3 = 0 | X \$80.00 | \$0 |
| MULTIPLE DEPENDENT CLAIM(S) (if applicable) | | | + \$260.00 | \$0 |
| TOTAL OF ABOVE CALCULATIONS = | | \$860.00 | | |
| Reduction by 1/2 for filing by small entity, if applicable. Small entity status is claimed pursuant to 37 CFR 1.27 | | \$430.00 | | |
| SUBTOTAL = | | \$430.00 | | |
| Processing fee of \$130.00 for furnishing the English translation later than [] 20 [] 30 months from the earliest claimed priority date (37 CFR 1.492(f)). | | + \$0 | | |
| TOTAL NATIONAL FEE = | | \$430.00 | | |
| Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40.00 per property | | + \$40.00 | | |
| TOTAL FEES ENCLOSED = | | \$470.00 | | |
| | | Amount to be: refunded | \$0 | |
| | | charged | \$0 | |
| <p>a. [X] Check(s) in the amount of <u>\$430.00</u> and <u>\$40.00</u> to cover the above fees is enclosed.</p> <p>b. [] Please charge my Deposit Account No. _____ in the amount of \$ _____ to cover the above fees. A duplicate copy of this sheet is enclosed.</p> <p>c. [X] The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. <u>13-2725</u>.</p> | | | | |
| <p>NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.</p> | | | | |
| SEND ALL CORRESPONDENCE TO John J. Gresens MERCHANT & GOULD P.O. Box 2903 Minneapolis, MN 55402-0903 | | <p>SIGNATURE: </p> <p>NAME: John J. Gresens</p> | | |
| REGISTRATION NUMBER: 33,112 | | | | |

09/787982

S/N unknown

JCG8 Rec'd PCT/PTO PATENT
22 MAR 2001

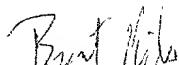
IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

| | | | |
|------------------|------------------------------------|--------------------|---------------------|
| Applicant: | Ulrich, Herbert | Docket No.: | 879.155USWO |
| Serial No.: | unknown | Filed: | concurrent herewith |
| Int'l Appln No.: | PCTDE9902708 | Int'l Filing Date: | August 24, 1999 |
| Title: | DEVICE FOR PRODUCING PLASTIC PIPES | | |

CERTIFICATE UNDER 37 CFR 1.10

'Express Mail' mailing label number: EL658338527US
Date of Deposit: March 22, 2001

I hereby certify that this paper or fee is being deposited with the United States Postal Service 'Express Mail Post Office To Addressee' service under 37 CFR 1.10 on the date indicated above and is addressed to the Assistant Commissioner of Patents and Trademarks, Washington, D.C. 20231.

By: 
Name: Brant Miles

PRELIMINARY AMENDMENT

Box PCT
Assistant Commissioner for Patents
Washington, D. C. 20231

Dear Sir:

In connection with the above-identified application filed herewith, please enter the following preliminary amendment in accordance with 37 CFR 1.121, a copy of which is enclosed herewith, which is based on the Article 36 amendments, based on claims amended in prosecution of the international application and published in the International Preliminary Examination Report, a copy of which is enclosed herewith:

IN THE ABSTRACT

Insert the attached Abstract page into the application as the last page thereof.

IN THE SPECIFICATION

On page 2, beginning with paragraph 1, please insert the following:

The baffles are not adjustable in their baffle-opening width, but rather only in their distance between one another.

Known from GB-A-21 82 603 is the use of a vacuum-tight chamber with a vacuum connection as a vacuum suction bell. Through the widening of the extrusion emerging from the drawing tool, transversely to the longitudinal axis of the pipe, a better fiber reinforcement of the product in the circumferential direction should be achieved.

In contrast to this, the object of the invention is to create a device in order to achieve during the production phase of the pipe, without interruption of the production process, a fully automatically-controlled conversion between several plastic pipe dimensions in the continuous extrusion process, the outside diameter and the pipe wall thickness being adjusted according to customer desires or to standardization, as the case may be.

This object of the invention is attained through the teaching of the main claim.

Advantageous configurations are explained in the dependent claims.

Expressed in different terms, it is proposed that a vacuum suction bell be connected to the pipe head in the direction of production, which vacuum suction bell is formed by a vacuum-tight chamber, to which is joined a vacuum connection; inside the chamber, measurement instruments control the outside diameter of the present molten extrusion and appropriately control the vacuum. Thus, through these means, the molten extrusion can be, for example, sucked up to a larger outside diameter, in order to be then conducted into the devices serving the further processing of the molten extrusion.

IN THE CLAIMS

Please insert the following amended claims:

1. (AMENDED) Device, with an extruder and a pipe head (1), for producing plastic pipes, with a vacuum suction bell (2) connected in the production direction to the pipe head (1) and formed by a vacuum-tight chamber (30) with a vacuum connection (5), characterized through measuring instruments inside the chamber (30), which detect the outside diameter of the pipe-shaped molten extrusion and, by changing the vacuum, alter the outside diameter of the molten extrusion in a controlled manner.
3. (AMENDED) Device according to claim 1, characterized by the fact that the measuring instruments control the outside diameter of the pipe (10) in a touch-free manner.
5. (AMENDED) Device according to claim 1, characterized by the fact that during the production phase the mass gap of the pipe head (1) is adjustable and provision is made for a calibrating station, connected to the vacuum suction bell (2), for the outside diameter of the pipe, in which station different pipe dimensions can be set during the production phase, and a vacuum calibrating bath (4) is connected to the calibrating station (3), in which bath the pipe (10) is cooled and hardened and leaves the vacuum calibrating bath (4) through a vacuum seal (9) that adjusts automatically to the pipe diameter.

A courtesy copy of the present specification is enclosed herewith. However, the World Intellectual Property Office (WIPO) copy should be relied upon if it is already in the U.S. Patent Office.

REMARKS

The above preliminary amendment is made to remove multiple dependencies from claim 3. Please refer to the Marked-Up pages 2, 3, and 5, attached herewith.

A new abstract page is supplied to conform to that appearing on the publication page of the WIPO application, but the new Abstract is typed on a separate page as required by U.S. practice.

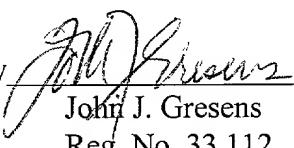
Applicants respectfully request that the preliminary amendment described herein be entered into the record prior to calculation of the filing fee and prior to examination and consideration of the above-identified application.

If a telephone conference would be helpful in resolving any issues concerning this communication, please contact Applicants' primary attorney-of record, John J. Gresens (Reg. No. 33,112), at (612) 371.5265.

Respectfully submitted,

MERCHANT & GOULD P.C.
Post Office Box 2903
Minneapolis, Minnesota 55402-0903
(612) 371-5265

Dated: March 22, 2001

By 
John J. Gresens
Reg. No. 33,112

JJG/rw

09/787982

ABSTRACT
PCTDE99/02709

JC08 Rec'd PCT/PTO 22 MAR 2001

DEVICE FOR PRODUCING PLASTIC PIPES

The invention relates to a device for producing plastic pipes (10), comprising an extruder, a pipe head (1) that is joined to the extruder in the direction of production and a suction bell (2) that enables the outer diameter of the extruded matter to be adjusted and regulated.

100 200 300 400 500 600 700 800 900 1000

CERTIFICATE UNDER 37 CFR 1.10

'Express Mail' mailing label number: EL658338527US
Date of Deposit: March 22, 2001

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By: 
Name: Brant Miles

[The baffles are not adjustable in their baffle-opening width, but rather only in their distance between one another.

The object of the invention is to create a device in order to achieve during the production phase of the pipe, without interruption of the production process, a fully automatically controlled resetting between several plastic pipe dimensions in the continuous extrusion process, the outside diameter and the pipe wall thickness being adjusted according to customer desires or to standardization, as the case may be.

This object of the invention is attained through the teaching of the main claim.

Advantageous configurations are explained in the dependent claims.

Expressed in different terms, it is proposed that a vacuum suction bell be connected to the pipe head in the direction of production, which vacuum suction bell is formed by a vacuum-tight chamber, to which is joined a vacuum connection; inside the chamber, measurement instruments control the outside diameter of the present molten extrusion and appropriately control the vacuum. Thus, through these means, the molten extrusion can be, for example, sucked up to a larger outside diameter, in order to be then conducted into the devices serving the further processing of the molten extrusion.]

The baffles are not adjustable in their baffle-opening width, but rather only in their distance between one another.

Known from GB-A-21 82 603 is the use of a vacuum-tight chamber with a vacuum connection as a vacuum suction bell. Through the widening of the extrusion emerging from the drawing tool, transversely to the longitudinal axis of the pipe, a better fiber reinforcement of the product in the circumferential direction should be achieved.

In contrast to this, the object of the invention is to create a device in order to achieve during the production phase of the pipe, without interruption of the production process, a fully automatically-controlled conversion between several plastic pipe dimensions in the continuous extrusion process, the outside diameter and the pipe wall thickness being adjusted according to customer desires or to standardization, as the case may be.

This object of the invention is attained through the teaching of the main claim.

Advantageous configurations are explained in the dependent claims.

Expressed in different terms, it is proposed that a vacuum suction bell be connected to the pipe head in the direction of production, which vacuum suction bell is formed by a vacuum-tight chamber, to which is joined a vacuum connection; inside the chamber, measurement instruments control the outside diameter of the present molten extrusion and appropriately control the vacuum. Thus, through these means, the molten extrusion can be, for example, sucked up to a larger outside diameter, in order to be then conducted into the devices serving the further processing of the molten extrusion.

Subsequently, the mass extrusion reaches a calibrating station, in which different pipe dimensions can be set. To be sure, known from WO 96/36 457 is the method of carrying out minor calibration adjustments in a calibrating station by the fact that through a wedging effect, individual open calibrating rings can be slightly changed in their diameter. With such an arrangement, however, a variation of the pipe outside dimension is not achievable, but rather it is merely counteracted by the contraction behavior. Subsequently to the calibrating station, the plastic pipe, not yet completely hardened, then enters a vacuum calibrating bath, the support rollers of which are adjustable to the desired pipe outside diameter. In this vacuum calibrating bath, the pipe is cooled, and thus solidified, through the addition of water and leaves this vacuum calibrating bath through a vacuum seal, which for its part is designed to automatically adjust to the pipe outside diameter, e.g. through a spring arrangement or through hydraulic adjustments; here also, water can be added for lubrication and sealing.

The whole production line can be automatically controlled through settings controlled, for example, by the size of the pipe widened in the vacuum suction bell; that is to say, through the prescription of a setting, for example inside the vacuum suction bell, all of the other calibrating-support and -sealing equipment fitting the outside diameter of the pipe is also set.

However, with the production line according to the invention, also in normal pipe production the actual value of the cooled-down pipe can be controlled and in the case of deviations can be readjusted.

In the following, an example of embodiment of the invention will be explained with the aid of the drawings. They show:

Fig. 1: an overall view of a production device

Fig. 2: on a larger scale, the actual suction bell

Patent Claims:

[1. Device for producing plastic pipes, with an extruder and a pipe head (1), characterized through a vacuum suction bell (2) connected in the production direction to the pipe head (1) and formed by a vacuum-tight chamber (30) with a vacuum connection (5), and through measuring instruments inside the chamber (30), which detect the outside diameter of the pipe-shaped molten extrusion and, by changing the vacuum, alter the outside diameter of the molten extrusion in a controlled manner.]

1. Device, with an extruder and a pipe head (1), for producing plastic pipes, with a vacuum suction bell (2) connected in the production direction to the pipe head (1) and formed by a vacuum-tight chamber (30) with a vacuum connection (5), characterized through measuring instruments inside the chamber (30), which detect the outside diameter of the pipe-shaped molten extrusion and, by changing the vacuum, alter the outside diameter of the molten extrusion in a controlled manner.

2. Device according to claim 1, characterized by the fact that the measuring instruments operate with sensing tools resting on the outside wall of the pipe.

3. Device according to claim 1 [or 2], characterized by the fact that the measuring instruments control the outside diameter of the pipe (10) in a touch-free manner.

4. Device according to claim 3, characterized by the fact that the measuring instruments control the outside diameter of the pipe (10) by means of sound or light sensors.

5. Device for producing plastic pipes with an extruder, a pipe head (1) connected to the extruder in the direction of production, and a vacuum suction bell (2) connected in the production direction to the pipe head (1) and formed by a vacuum-tight chamber (30) with a vacuum connection (5), whereby inside the chamber (30) measuring instruments detect the outside diameter of the pipe-shaped molten extrusion and, by changing the vacuum, alter the outside diameter of the molten extrusion in a controlled manner, characterized by the fact that during the production phase the mass gap of the pipe head (1) is adjustable and provision is made for a calibrating station, connected to the vacuum suction bell (2), for the outside diameter of the pipe, in which station different pipe dimensions can be set during the production phase, and a vacuum calibrating bath (4) is

MARKED UP VERSION

connected to the calibrating station (3), in which bath the pipe (10) is cooled and hardened and leaves the vacuum calibrating bath (4) through a vacuum seal (9) that adjusts automatically to the pipe diameter.]

5. Device according to claim 1, characterized by the fact that during the production phase the mass gap of the pipe head (1) is adjustable and provision is made for a calibrating station, connected to the vacuum suction bell (2), for the outside diameter of the pipe, in which station different pipe dimensions can be set during the production phase, and a vacuum calibrating bath (4) is connected to the calibrating station (3), in which bath the pipe (10) is cooled and hardened and leaves the vacuum calibrating bathe (4) through a vacuum seal (9) that adjusts automatically to the pipe diameter.

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JCUS NO 0 PCT/PTO

22 MAR 2001

DEVICE FOR PRODUCING PLASTIC PIPES

The invention relates to a device for producing plastic pipes according to the precharacterizing clause of the main claim.

In equipment that produces plastic pipes, there exists the problem that pipes of different outside diameters must be produced with, at the same time, different wall thicknesses. In the prior art in this regard it is necessary that, corresponding to the outside diameter of the pipe and to the desired wall thickness (usually normalized in dependence on the outside diameter) of the pipe, appropriate tools be interchanged. This causes a stopping of the machine, a high labor expense for the exchanging of the tools, and a loss of plastic material, until the new pipe can be again drawn. An appropriate drawing of the pipe that allows the production of a pipe of less wall thickness, with an existing outside diameter, is for this reason impossible, since the molecular chain of the plastic material is stretched and also orientated in such a manner that thereby the strength of the pipe is negatively influenced, and the formation of shrinkings and foldings is fostered.

Described in AT 401 031 B is a device for regulating the wall strength of a pipe consisting of thermoplastic plastic masses and produced through extrusion. In this arrangement, the extruded pipe is placed into a calibrating mold against the latter's cooled inside wall by means of an underpressure generated in the region of the inside wall. In this, the inside wall of the calibrating mold is subdivided into sections or sectors adjoining one another in the circumferential direction, which sections or sectors are thermally uncoupled from one another, with independently controllable temperature equipment assigned to the individual sectors or sections. If pipe of different outside diameters are to be produced, then the inner equipment of the calibrating chamber, against which the outside pipe wall is placed through underpressure, must be completely changed out and replaced by other equipment having a different diameter.

Also, explained in DE 19 23 490 A1 is a calibrating chamber in which are arranged baffles that are independent of each other, which baffles are cooled, generating in the calibrating chamber an underpressure through which the pipe outside wall is placed against the baffles. Here likewise, when different pipe outside diameters are required, a re-equipping of the calibrating chamber through the use of different baffles is necessary.

The object of the invention is to create a device in order to achieve during the production phase of the pipe, without interruption of the production process, a fully automatically controlled resetting between several plastic pipe dimensions in the continuous extrusion process, the outside diameter and the pipe wall thickness being adjusted according to customer desires or to standardization, as the case may be.

This object of the invention is attained through the teaching of the main claim.

Advantageous configurations are explained in the dependent claims.

Expressed in different terms, it is proposed that a vacuum suction bell be connected to the pipe head in the direction of production, which vacuum suction bell is formed by a vacuum-tight chamber, to which is joined a vacuum connection; inside the chamber, measurement instruments control the outside diameter of the present molten extrusion and appropriately control the vacuum. Thus, through these means, the molten extrusion can be, for example, sucked up to a larger outside diameter, in order to be then conducted into the devices serving the further processing of the molten extrusion.

Subsequently, the mass extrusion reaches a calibrating station, in which different pipe dimensions can be set. To be sure, known from WO 96/36 457 is the method of carrying out minor calibration adjustments in a calibrating station by the fact that through a wedging effect, individual open calibrating rings can be slightly changed in their diameter. With such an arrangement, however, a variation of the pipe outside dimension is not achievable, but rather it is merely counteracted by the contraction behavior. Subsequently to the calibrating station, the plastic pipe, not yet completely hardened, then enters a vacuum calibrating bath, the support rollers of which are adjustable to the desired pipe outside diameter. In this vacuum calibrating bath, the pipe is cooled, and thus solidified, through the addition of water and leaves this vacuum calibrating bath through a vacuum seal, which for its part is designed to automatically adjust to the pipe outside diameter, e.g. through a spring arrangement or through hydraulic adjustments; here also, water can be added for lubrication and sealing.

The whole production line can be automatically controlled through settings controlled, for example, by the size of the pipe widened in the vacuum suction bell; that is to say, through the prescription of a setting, for example inside the vacuum suction bell, all of the other calibrating-support and -sealing equipment fitting the outside diameter of the pipe is also set.

However, with the production line according to the invention, also in normal pipe production the actual value of the cooled-down pipe can be controlled and in the case of deviations can be readjusted.

In the following, an example of embodiment of the invention will be explained with the aid of the drawings. They show:

Fig. 1: an overall view of a production device

Fig. 2: on a larger scale, the actual suction bell

Recognizable in Fig. 1 is an adjustable pipe head, which, seen in the production direction, adjoins an extruder (not represented in the drawing). Connected to the adjustable pipe head 1 is a vacuum suction bell 2, which is equipped with a vacuum suction connection 5, in which provision is made for measuring devices that, depending on the desired pipe outside diameter, set the vacuum prevailing in the suction lock, so that thereby the pipe-shaped stream of molten material is adjusted to the desired outside diameter, i.e. is sucked up; in this, a pre-cooling of the molten extrusion can already take place in the vacuum suction bell 2. In the vacuum suction bell 2, in conjunction with the adjustable pipe head an exact pipe wall thickness can be set; the pipe wall thickness can be varied depending on the outside diameter of the pipe.

Connected to the vacuum suction bell 2 is a calibrating station 3. Here, through a mechanical central adjustment, takes place the exact calibration of the outside diameter of the extrusion of molten material and of the already partially-hardened pipe, this calibration being applicable to all plastics that come into consideration. In this calibration station, several dimensions can be adjusted even with the different wall thicknesses.

In a vacuum calibrating bath 4 connected with this, seen in the production direction, the cooling down and hardening of the plastic pipe then takes place through water spray, a water feed 6 and a water outlet 7 being recognizable in the drawing. Further, joined to the vacuum calibrating bath 4 is a vacuum connection 8, and the pipe 10 located in the vacuum calibrating bath 4 passes over support rollers 11, which can also be called the calibrating rollers and can be set to the desired pipe diameter. The surface of the pipe 10 is relatively hard, and the pipe 10 leaves the vacuum calibrating bath 4 through a vacuum seal 9, which either adjusts automatically to the pipe diameter or is adjusted depending on the pipe dimensions set in the calibrating station 3 and/or in the vacuum calibrating bath 4. In the vacuum seal 9 can be arranged formed rollers, which are

actuated hydraulically or through mechanical springs; here, at the same time, water for lubrication and sealing can be introduced into the path of the pipe.

The suction bell represented in Fig. 2 consists in essence of a vacuum-tight chamber 30, into which leads the pipe-shaped molten extrusion 10. This chamber is equipped with a vacuum connection 5, and provision is made inside the chamber for measuring instruments (not represented in the drawing), which control the outside diameter of the molten extrusion and, depending on the desired widening of the molten extrusion, now control the vacuum, so that this is higher or lower. Thus, there takes place a regulating of the vacuum in dependence on the desired pipe geometry, i.e. of the desired pipe outside diameter.

Patent Claims:

1. Device for producing plastic pipes, with an extruder and a pipe head (1), characterized through a vacuum suction bell (2) connected in the production direction to the pipe head (1) and formed by a vacuum-tight chamber (30) with a vacuum connection (5), and through measuring instruments inside the chamber (30), which detect the outside diameter of the pipe-shaped molten extrusion and, by changing the vacuum, alter the outside diameter of the molten extrusion in a controlled manner.
2. Device according to claim 1, characterized by the fact that the measuring instruments operate with sensing tools resting on the outside wall of the pipe.
3. Device according to claim 1 or 2, characterized by the fact that the measuring instruments control the outside diameter of the pipe (10) in a touch-free manner.
4. Device according to claim 3, characterized by the fact that the measuring instruments control the outside diameter of the pipe (10) by means of sound or light sensors.
5. Device for producing plastic pipes with an extruder, a pipe head (1) connected to the extruder in the direction of production, and a vacuum suction bell (2) connected in the production direction to the pipe head (1) and formed by a vacuum-tight chamber (30) with a vacuum connection (5), whereby inside the chamber (30) measuring instruments detect the outside diameter of the pipe-shaped molten extrusion and, by changing the vacuum, alter the outside diameter of the molten extrusion in a controlled manner, characterized by the fact that during the production phase the mass gap of the pipe head (1) is adjustable and provision is made for a calibrating station, connected to the vacuum suction bell (2), for the outside diameter of the pipe, in which station different pipe dimensions can be set during the production phase, and a vacuum calibrating bath (4) is connected to the calibrating station (3), in which bath the pipe (10) is cooled and hardened and leaves the vacuum calibrating bath (4) through a vacuum seal (9) that adjusts automatically to the pipe diameter.

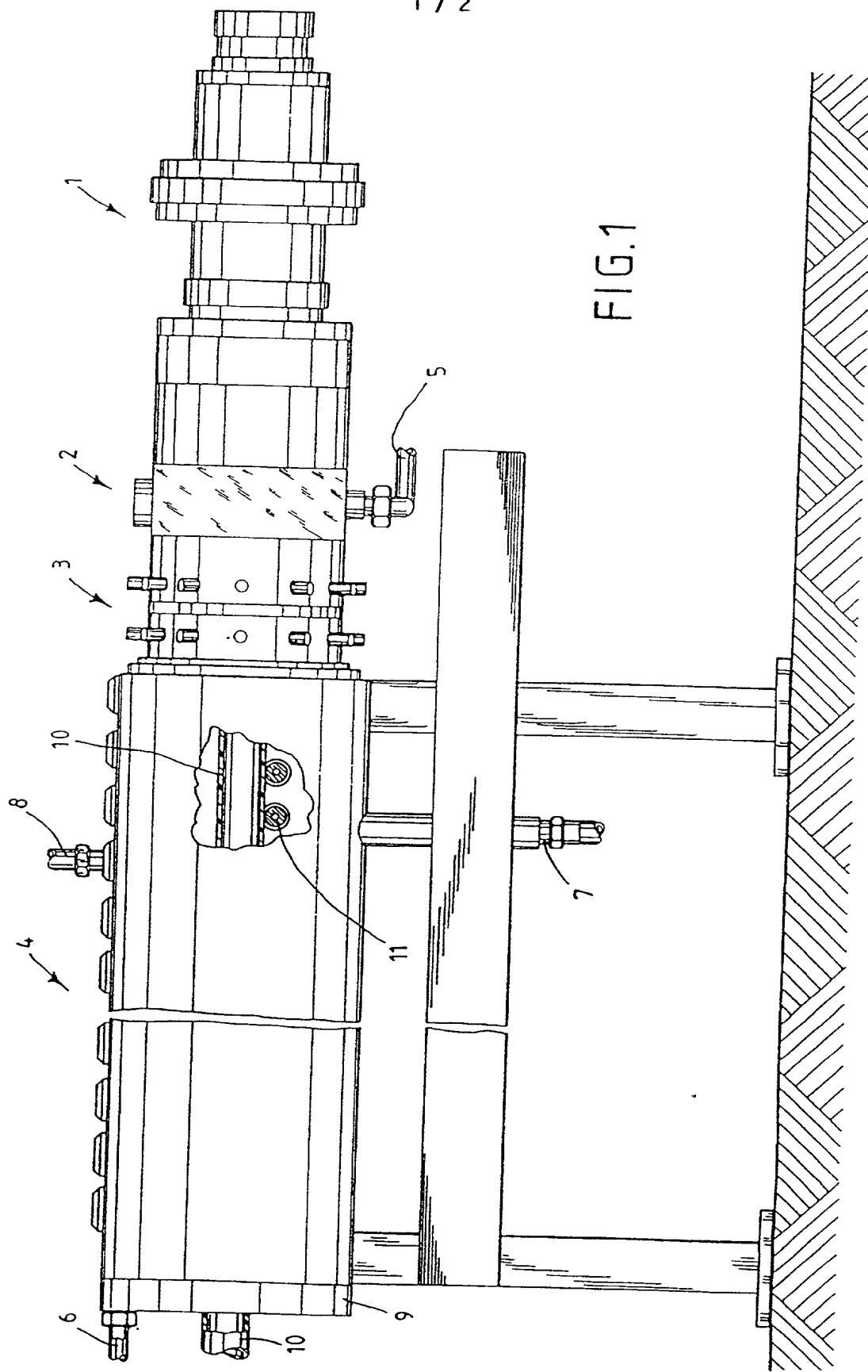
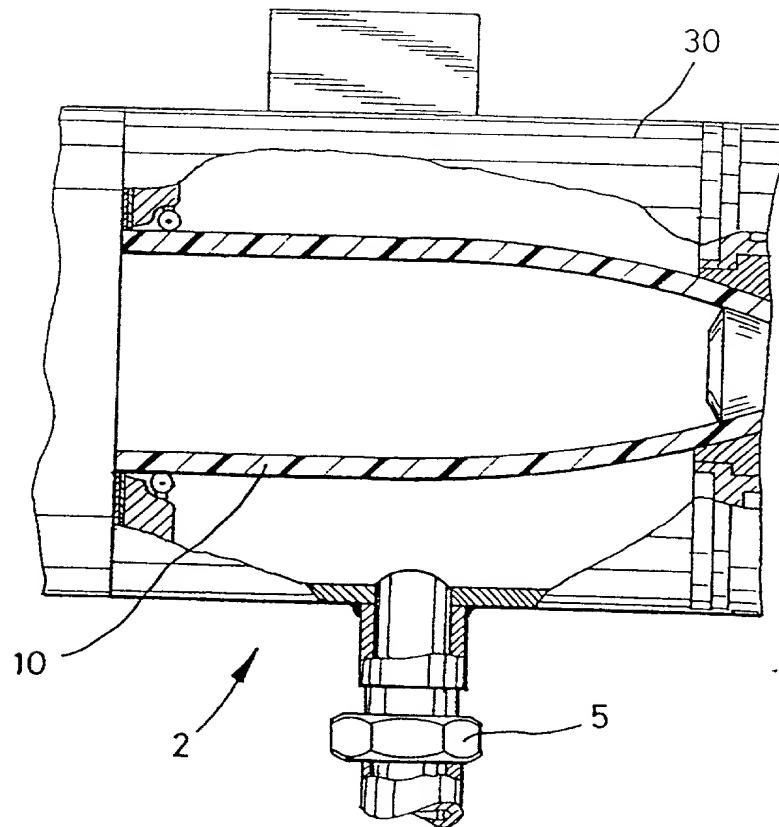


FIG. 2



Attorney Docket No. 879.155USWO

MERCHANT & GOULD P.C.

United States Patent Application

COMBINED DECLARATION AND POWER OF ATTORNEY

As a below named inventor I hereby declare that: my residence, post office address and citizenship are as stated below next to my name; that

I verily believe I am the original, first and sole inventor (if only one name is listed below) or a joint inventor (if plural inventors are named below) of the subject matter which is claimed and for which a patent is sought on the invention entitled: DEVICE FOR PRODUCING PLASTIC PIPES

The specification of which

a. is attached hereto
 b. was filed on as application serial no. and was amended on (if applicable) (in the case of a PCT-filed application) described and claimed in international no. PCTDE9902709 filed August 24, 1999 and as amended on (if any), which I have reviewed and for which I solicit a United States patent.

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I hereby claim foreign priority benefits under Title 35, United States Code, § 119/365 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on the basis of which priority is claimed:

a. no such applications have been filed.
 b. such applications have been filed as follows:

FOREIGN APPLICATION(S), IF ANY, CLAIMING PRIORITY UNDER 35 USC § 119

| COUNTRY | APPLICATION NUMBER | DATE OF FILING (day, month, year) | DATE OF ISSUE (day, month, year) |
|---------|--------------------|--------------------------------------|-------------------------------------|
| GERMANY | 198 43 339.5 | 22-SEPTEMBER-1998 | |

ALL FOREIGN APPLICATION(S), IF ANY, FILED BEFORE THE PRIORITY APPLICATION(S)

| COUNTRY | APPLICATION NUMBER | DATE OF FILING (day, month, year) | DATE OF ISSUE (day, month, year) |
|---------|--------------------|--------------------------------------|-------------------------------------|
| | | | |

I hereby claim the benefit under Title 35, United States Code, § 120/365 of any United States and PCT international application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, § 112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, § 1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application.

| U.S. APPLICATION NUMBER | DATE OF FILING (day, month, year) | STATUS (patented, pending, abandoned) |
|-------------------------|-----------------------------------|---------------------------------------|
| | | |

I hereby claim the benefit under Title 35, United States Code § 119(e) of any United States provisional application(s) listed below:

| U.S. PROVISIONAL APPLICATION NUMBER | DATE OF FILING (Day, Month, Year) |
|-------------------------------------|-----------------------------------|
| | |

I acknowledge the duty to disclose information that is material to the patentability of this application in accordance with Title 37, Code of Federal Regulations, § 1.56 (reprinted below):

§ 1.56 Duty to disclose information material to patentability.

(a) A patent by its very nature is affected with a public interest. The public interest is best served, and the most effective patent examination occurs when, at the time an application is being examined, the Office is aware of and evaluates the teachings of all information material to patentability. Each individual associated with the filing and prosecution of a patent application has a duty of candor and good faith in dealing with the Office, which includes a duty to disclose to the Office all information known to that individual to be material to patentability as defined in this section. The duty to disclose information exists with respect to each pending claim until the claim is canceled or withdrawn from consideration, or the application becomes abandoned. Information material to the patentability of a claim that is canceled or withdrawn from consideration need not be submitted if the information is not material to the patentability of any claim remaining under consideration in the application. There is no duty to submit information which is not material to the patentability of any existing claim. The duty to disclose all information known to be material to patentability is deemed to be satisfied if all information known to be material to patentability of any claim issued in a patent was cited by the Office or submitted to the Office in the manner prescribed by §§ 1.97(b)-(d) and 1.98. However, no patent will be granted on an application in connection with which fraud on the Office was practiced or attempted or the duty of disclosure was violated through bad faith or intentional misconduct. The Office encourages applicants to carefully examine:

- (1) prior art cited in search reports of a foreign patent office in a counterpart application, and
- (2) the closest information over which individuals associated with the filing or prosecution of a patent application believe any pending claim patentably defines, to make sure that any material information contained therein is disclosed to the Office.

(b) Under this section, information is material to patentability when it is not cumulative to information already of record or being made of record in the application, and

- (1) It establishes, by itself or in combination with other information, a prima facie case of unpatentability of a claim;
- (2) It refutes, or is inconsistent with, a position the applicant takes in:
 - (i) Opposing an argument of unpatentability relied on by the Office, or
 - (ii) Asserting an argument of patentability.

A prima facie case of unpatentability is established when the information compels a conclusion that a claim is unpatentable under the preponderance of evidence, burden-of-proof standard, giving each term in the claim its broadest reasonable construction consistent with the specification, and before any consideration is given to evidence which may be submitted in an attempt to establish a contrary conclusion of patentability.

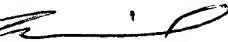
(c) Individuals associated with the filing or prosecution of a patent application within the meaning of this section are:

- (1) Each inventor named in the application;
- (2) Each attorney or agent who prepares or prosecutes the application; and
- (3) Every other person who is substantively involved in the preparation or prosecution of the application and who is associated with the inventor, with the assignee or with anyone to whom there is an obligation to assign the application.

(d) Individuals other than the attorney, agent or inventor may comply with this section by disclosing information to the attorney, agent, or inventor.

(e) In any continuation-in-part application, the duty under this section includes the duty to disclose to the Office all information known to the person to be material to patentability, as defined in paragraph (b) of this section, which became available between the filing date of the prior application and the national or PCT international filing date of the continuation-in-part application.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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|--|----------------------------|-----------------------------------|-------------------------------------|---|
| 2 | Full Name Of Inventor | Family Name <u>ULRICH</u> | First Given Name Herbert | Second Given Name |
| 0 | Residence & Citizenship | City Emsdetten | State or Foreign Country GERMANY | Country of Citizenship GERMANY |
| 1 | Mailing Address | Address Nordwalder Strasse 104 | City Emsdetten | State & Zip Code/Country D-48282/GERMANY |
| Signature of Inventor 201:  | | | Date: <u>20.02.01</u> | |

I hereby appoint the following attorney(s) and/or patent agent(s) to prosecute this application and to transact all business in the Patent and Trademark Office connected herewith:

| | | | |
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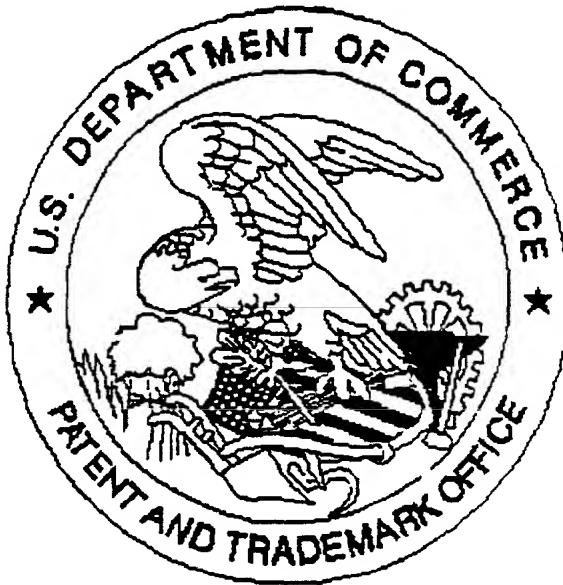
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